

### **REMARKS**

This is in response to the Office Communication mailed May 31, 2007. Applicants thank the Examiner for the opportunity to bring the claims into accord with the previous election, which is done in this submission.

After entry of this amendment, claims 45 and 47-58 are pending. Claims 1-44 have been cancelled without prejudice or disclaimer. Claim 45 has been amended to recite steps of the method for the production of starch and/or oil, and to incorporate the subject matter of claim 4, now cancelled, from which claim 45 originally depended. Support is found *inter alia* in the original claim and claim 4. New claims 47-58 have been added. Support for the new claim 47 is found in the original claims 5 and 45, and in the specification at page 13, lines 7-14. New claims 48, 49 and 50 find support in the original claim 45, further in view of the original claims 6, 7, and 8, respectively. Support for the new claim 51 is found in the original claims 10 and 45, and in the specification at page 15, lines 11-17. New claim 52 finds support in the original claims 9 and 45. New claims 53 and 54 find support in the original claims 12 and 45. New claims 55 and 56 find support in the original claims 13 and 45. Support for the new claim 57 is found in the specification at page 12, lines 5-17. Support for the new claim 58 is found in the original claims 14 and 45. No new matter has been added.

### **Objection To the Claims**

The Examiner objected to claims for reciting non-elected sequences. The claims have been amended or canceled without prejudice or disclaimer to remove the non-elected subject matter. In view of the present amendment, this objection is removed.

### **Rejections under 35 U.S.C. § 112, Second Paragraph**

Claims 6, 12, 13, 24 and 45 were rejected under 35 U.S.C. § 112, second paragraph, for indefiniteness.

In the present amendment, the claims have been amended or canceled without prejudice or disclaimer and the new claims avoid the wording that was found objectionable. Thus, it is believed that the present amendment addresses the rejections made under 35 U.S.C. § 112, second paragraph. Reconsideration and withdrawal of the rejections is respectively requested.

**Rejections under 35 U.S.C. § 112, First Paragraph**

Claim 10 was rejected under 35 U.S.C. § 112, first paragraph, for allegedly failing to comply with the written description requirement and for lack of an enabling disclosure. In view of the present amendment in which claim 10 has been cancelled without prejudice or disclaimer, it is believed that the rejection is rendered moot.

Furthermore, it is respectfully submitted that the amended claim 45 and the new claims comply with the written description requirement and are enabled. Please note initially that the claims as now presented are method claims. By way of working examples, the specification of the present application demonstrates how to generate expression constructs for tissue-specific expression (Example 5 at pages 19-20), plant transformation (Examples 6 and 7 at pages 20-23), analysis of hemoglobin expression in transformed plant (Example 8 at pages 23-25), and analysis of the effect of the hemoglobin expression on the production of the desired product (Examples 9-11 at pages 25-30). Thus, only routine experimentation would be required for one of ordinary skill in the art to follow the teaching of the present application and to produce a transgenic plant expressing at least one hemoglobin and to recover the starch and/or oil produced from such a transgenic plant. Moreover, only routine experimentation would be required to one skilled in the art to determine whether a hemoglobin-coding sequence with at least 90% identity with the sequence of SEQ ID NO: 5 has the desired enzymatic activity. As recognized in *In re Wands*, 858 F.2d 731 (Fed. Cir. 1988), enablement is not precluded by the necessity for some experimentation such as routine screening so long as it is not undue.

For at least the above reasons and in light of the amendments, reconsideration and withdrawal of the rejections under 35 U.S.C. § 112, first paragraph is respectfully requested.

**Rejections under 35 U.S.C. § 102**

Claims 4, 6-14, and 20-24 were rejected under 35 U.S.C. § 102(e) as being anticipated by Harper et al., and under 35 U.S.C. § 102(b) as being anticipated by Sowa et al. In view of the present amendment in which claims 4, 6-14, and 20-24 have been cancelled without prejudice or disclaimer, it is believed that the rejections are rendered moot.

Furthermore, as discussed above, the claims as now presented are drawn to a method for the production of starch and/or oil using transformed plants that express hemoglobin. The

Harper et al. and Sowa et al. references, although they disclose a transformed plant expressing hemoglobin, do not teach a method for the production of starch and/or oil using such transformed plants, as now claimed. Therefore, it is submitted that neither Harper et al. nor Sowa et al. anticipates the claimed invention. Reconsideration and withdrawal of the rejection is respectfully requested.

**Rejections under 35 U.S.C. § 103**

Claims 4, 6-8, 11-14, and 45 were rejected under 35 U.S.C. § 103 as being obvious over Sowa et al. in view of Arntzen et al. The claims were also rejected under 35 U.S.C. § 103 as being obvious over Sowa et al. and Arntzen et al., further in view of Trevaskis et al. Applicants respectfully traverse.

To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. See MPEP § 2143.03. It is submitted that Sowa et al., Arntzen et al., and Trevaskis et al., alone or in combination, do not disclose or teach all the claim limitations.

Sowa et al. teach the changes in the energy status in maize cells by altering the hemoglobin level under hypoxia. There is no teaching or suggestion in Sowa et al. that an increase in the hemoglobin level would lead to an increased starch and/or oil content in the plants.

Arntzen et al. teach production of oral vaccine by producing edible transgenic plants, wherein the transgenic expression can be in a tuber- or seed-specific manner. Arntzen et al., however, do not teach or suggest production of a transformed plant that expresses hemoglobin.

Trevaskis et al. disclose two hemoglobin genes in *Arabidopsis thaliana*, AHB1 and AHB2, and their expression pattern in plants. According to Trevaskis et al., the functions of these two proteins were not yet well understood. See last paragraph at p. 12233, right Col. It is suggested that transgenic plants that over- or under-express AHB1 or AHB2 should lead to a better understanding of the functions of these plant hemoglobin. There is, however, no suggestion made in Trevaskis et al. for the use of these hemoglobin to increase starch and/or oil content in plants.

It follows that, absent the hindsight afforded by a reading of Applicants' disclosure, there was no teaching, suggestion, or motivation in the cited references, alone or in combination, to produce starch and/or oil from transformed plants that express at least one hemoglobin. Accordingly, the subject matter as claimed would not have been obvious in view of the references cited by the Examiner.


Reconsideration and withdrawal of the obviousness rejection is respectfully requested.

**Conclusion**

For at least the above reasons, Applicants respectfully request withdrawal of the rejections and allowance of the claims.

Accompanying this response is a petition for a one-month extension of time to and including July 31, 2007 to respond to the Office Communication dated May 31, 2007 with the required fee authorization. No further fees are believed due. If any additional fee is due, the Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 03-2775, under Order No. 13311-00008-US from which the undersigned is authorized to draw.

Respectfully submitted,

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